

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

VANTICO AG
Patents/Scientific Information
Klybeckstrasse 200
CH-4057 Basel
SUISSE

Date of mailing (day/month/year) 31 October 2001 (31.10.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference AT/K-22036/A/MA 2181	
International application No. PCT/EP00/05170	International filing date (day/month/year) 06 June 2000 (06.06.00)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

RABENER, Claus, Willi
12 St. George's Court
Cavendish Avenue
Cambridge
Cambs CB1 7UP
United Kingdom

State of Nationality

DE

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☒ the address ☐ the nationality ☐ the residence

Name and Address

RABENER, Claus, Willi
Schmiedackerstrasse 21
79576 Weil am Rhein
GERMANY

State of Nationality

DE

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the International Searching Authority ☒ the elected Offices concerned
☒ the International Preliminary Examining Authority ☐ other:
The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Maria Victoria CORTIELLO

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 12 February 2001 (12.02.01)	Applicant's or agent's file reference AT/K-22036/A/MA 2181
International application No. PCT/EP00/05170	Priority date (day/month/year) 12 June 1999 (12.06.99)
International filing date (day/month/year) 06 June 2000 (06.06.00)	
Applicant HATTON, Kevin, Brian et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
19 December 2000 (19.12.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer S. Mafla
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number
WO 00/77066 A3

- (51) International Patent Classification⁷: C08G 59/68
- (21) International Application Number: PCT/EP00/05170
- (22) International Filing Date: 6 June 2000 (06.06.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
9913627.7 12 June 1999 (12.06.1999) GB
- (71) Applicant (for all designated States except US): **VANTICO AG** [CH/CH]; Patent/Scientific Information, Klybeckstrasse 200, CH-4057 Basel (CH).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HATTON, Kevin, Brian** [GB/GB]; 28 Rushleigh Green, Bishops Stortford, Hertfordshire CM23 4JH (GB). **BARKER, Pauline, Goodall** [GB/GB]; 16 Sternes Way, Stapleford, Cambridge CB2 5DA (GB). **RABENER, Claus, Willi** [DE/GB]; 12 St. George's Court, Cavendish Avenue, Cambridge, Cambs CB1 7UP (GB).
- (74) Common Representative: **VANTICO AG**; Patents/Scientific Information, Klybeckstrasse 200, CH-4057 Basel (CH).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:**
- With international search report.
 - Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.
- (88) Date of publication of the international search report:
8 February 2001
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR THE PREPARATION OF REACTION PRODUCTS OF CYCLOALIPHATIC EPOXIDES WITH MULTIFUNCTIONAL HYDROXY COMPOUNDS

(57) Abstract: The invention relates to the process for the preparation of liquid reaction products of cycloaliphatic epoxides with mono- or multifunctional hydroxy compounds. The process comprises reacting a polyfunctional cycloaliphatic epoxy resin with a mono- or a multifunctional hydroxy compound in the presence of a heterogeneous surface-active catalyst. The invention also relates to curable compositions containing the product obtained by the process.

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10/018667

From the INTERNATIONAL BUREAU

**NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 21 December 2000 (21.12.00)		
Applicant's or agent's file reference AT/K-22036/A/MA 2181		
IMPORTANT NOTICE		
International application No. PCT/EP00/05170	International filing date (day/month/year) 06 June 2000 (06.06.00)	Priority date (day/month/year) 12 June 1999 (12.06.99)
Applicant VANTICO AG et al		

To:

VANTICO AG
 Patents/Scientific Information
 Klybeckstrasse 200
 CH-4057 Basel
 SUISSE

28. Dez. 2000

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1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
- AG, AU, DZ, KP, KR, MZ, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
- AE, AL, AM, AP, AT, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EA, EE, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, OA, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW
- The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).
3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 21 December 2000 (21.12.00) under No. WO 00/77066

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AT/K-22036/A/MA 2181	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/05170	International filing date (day/month/year) 06/06/2000	(Earliest) Priority Date (day/month/year) 12/06/1999
Applicant VANTICO AG		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- ☐ as suggested by the applicant.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

☒ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C08G59/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 115 295 A (ROBINS JANIS ET AL) 19 September 1978 (1978-09-19)	11-15
A	column 4, line 36 to column 5, line 21 column 5, line 64-66; claim 11	1-10
X	US 3 398 102 A (SOLDATOS ANTHONY C ET AL) 20 August 1968 (1968-08-20)	11-15
A	claim 2; example 1	1-10
X	EP 0 493 916 A (CIBA GEIGY AG) 8 July 1992 (1992-07-08)	11-15
A	page 4, line 1-5; example 9	1-10
A	US 5 316 106 A (BAEDKE WILLIAM D ET AL) 31 May 1994 (1994-05-31)	1-15
	the whole document	

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

7 December 2000

Date of mailing of the international search report

14/12/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5618 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Rousseau, F

INTERNATIONAL SEARCH REPORT

Application No

PCT/EP 00/05170

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 105 488 A (UNION CARBIDE CORP) 18 Apr 11 1984 (1984-04-18) the whole document -----	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

ann

Application No

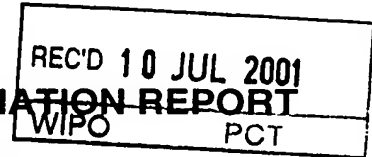
PCT, L. 00/05170

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4115295	A	19-09-1978	NONE		
US 3398102	A	20-08-1968	NONE		
EP 0493916	A	08-07-1992	BR	9105435 A	22-09-1992
			DE	69125131 D	17-04-1997
			DE	69125131 T	30-10-1997
			ES	2099142 T	16-05-1997
			JP	4314719 A	05-11-1992
			KR	210258 B	15-07-1999
			US	5362835 A	08-11-1994
US 5316106	A	31-05-1994	NONE		
EP 0105488	A	18-04-1984	AU	566647 B	29-10-1987
			AU	1974183 A	05-04-1984
			JP	1445497 C	30-06-1988
			JP	59081329 A	11-05-1984
			JP	62054338 B	14-11-1987
			MX	168518 B	27-05-1993
			NO	833537 A,B,	02-04-1984
			US	4532274 A	30-07-1985

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)





Applicant's or agent's file reference AT/K-22036/PCT/A/MA	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP00/05170	International filing date (day/month/year) 06/06/2000	Priority date (day/month/year) 12/06/1999
International Patent Classification (IPC) or national classification and IPC C08G59/68		
Applicant VANTICO AG et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 19/12/2000	Date of completion of this report 06.07.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Rousseau, F Telephone No. +49 89 2399 8297 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05170

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-17 as originally filed

Claims, No.:

1-15 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/05170

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-10
	No:	Claims	11-15
Inventive step (IS)	Yes:	Claims	1-10
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

1. US-A-4 115 295 (D1) discloses in claim 11 the reaction product of 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexene carboxylate with a hydroxy compound having a functionality of at least 1, wherein the ratio of equivalents of hydroxyl-containing material to equivalents of epoxide may be in the range of 0.3 : 1 to 1.5 to 1 and even as low as 0.001 : 1 (see column 5, lines 64-66). A list of suitable hydroxy compounds having a functionality of at least 1 is disclosed in the passage from column 4, line 36 to column 5, line 21. For low ratios of equivalents of hydroxyl-containing material to equivalents of epoxide, especially when monofunctional hydroxy compounds are used, liquid products having an epoxide content greater than 0.1 mol/kg should be obtained. Hence, the subject-matter of claims 11 to 15 is deemed to lack novelty in view of D1 (Art. 33(2) PCT). The subject-matter of claim 11 also lacks novelty in view of example 47 of D1.

US-A-3 398 102 (D2) discloses in claim 2 the reaction product of 1 mole bis(2,3-epoxycyclopentyl)ether with 0.2 to 3 moles of a polyol. The polyol may be according to example 1 ethylene glycol. When 0.2 mole of ethylene glycol and 1 mole of bis(2,3-epoxycyclopentyl)ether is used, a liquid product having an epoxide content greater than 0.1 mol/kg should be obtained. Thus, the subject-matter of claims 11 to 15 is anticipated by D2 (Art. 33(2) PCT).

EP-A-0 493 916 (D3) discloses in example 9 and in page 4, lines 1 to 5 an epoxy-terminated material obtainable by reacting a cycloaliphatic epoxide with a multifunctional hydroxy compound, said epoxy-terminated material having an epoxide content of 2,36 mol/kg. Therefore, the subject-matter of claims 11 to 15 is not novel over D3 (Art. 33(2) PCT).

2. The search has not revealed any document disclosing the preparation of liquid product resulting from the reaction of a polyfunctional cycloaliphatic epoxide with multifunctional hydroxy compounds, using a heterogeneous surface-active catalyst selected from the list defined in present claim 1. Hence, the subject-matter of claims 1 to 10 meets the requirements of Art. 33(2) PCT. Closest prior art for analysis of inventive step is D3. The technical problem solved by the use of the above catalysts can be seen as to provide a further process for the preparation of the epoxide material obtained in D3. The search has not revealed any document which renders obvious that activated aluminum hydroxide,

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/05170

hydrated aluminum oxide, amorphous silica, activated carbon and cationic exchange resins are efficient heterogeneous surface-active catalysts for the preparation of products as defined in present claim 1. Consequently, the subject-matter of claims 1 to 10 appears to be inventive (Art. 33(3) PCT).

3. The subject-matter of claims 1 to 15 is industrially applicable.
4. The epoxy compound used must be according to claim 1 a polyfunctional cycloaliphatic epoxide and therefore cannot have the structure (I) as defined in page 2 of the description (Art. 6 PCT).